EMERGENCY VEHICLE OPERATOR

CLASS "B"

Session 4

Managing Risk – The Driver & The Situation

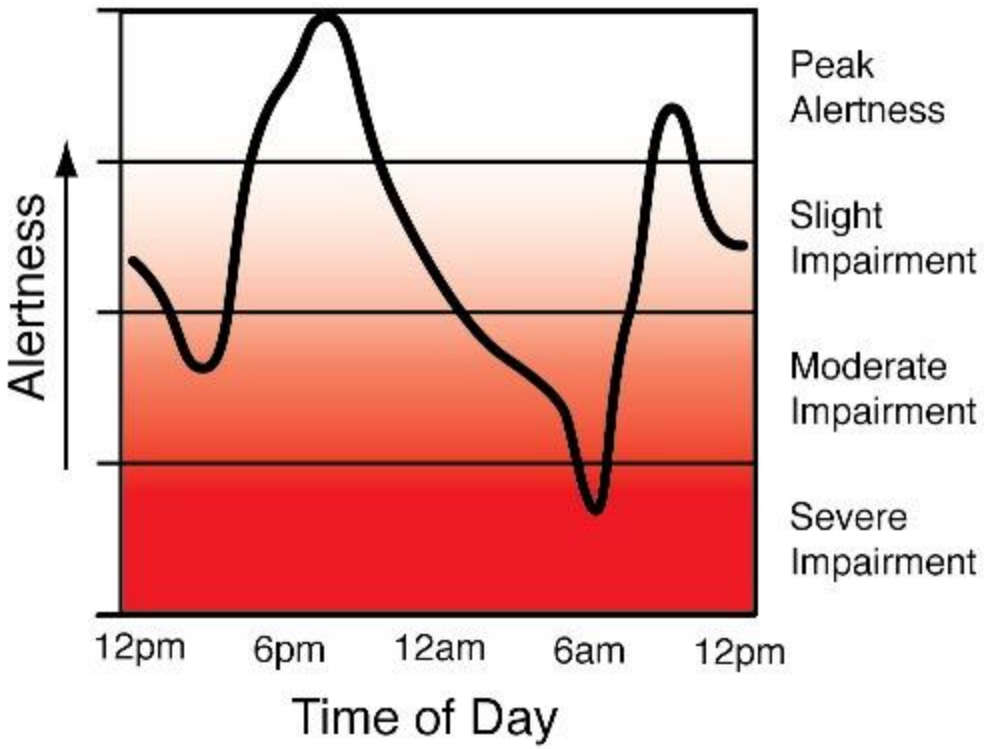
Overview

- Driver fatigue
- Driver impairments
- Emotions

- Operational Situations
  - Intersections
  - Arriving
  - Railroad crossings
  - Tight clearance
  - Parking lots
  - Around the station

Driver Fatigue

- Not just falling asleep at the wheel
  - Falling asleep is an extreme form of driver fatigue
- Fatigue is tiredness, weariness or exhaustion
- Behavioral signs
  - changes in mood and motivation
  - failure to complete routines and
  - slower responses to questions or requests



Driver Fatigue
Causes

- Stress
- Lack of quality sleep or interrupted sleep patterns
  - apnea
- Substance abuse
- Prescription medications
- Irregular work hours
- Irregular meal times/eating habits

Driver Fatigue
Effects

- increasing reaction time
- degrading attention and vigilance
- increasing distractibility and confusion
- decreasing motivation, and
- increasing the probability of driving performance errors

Driver Fatigue Prevention

- Sleep schedule
  - Have a routine
- Sleep environment
  - Remove distractions
  - Dark, cool, clean
- Pre-bed snacks/drinks
  - No heavy foods or alcohol
  - No caffeine
- Exercise
  - Allow 3 hours for cool-down
- Diet
  - Avoid fatty or sugary food
- Naps
  - Not a substitute for night sleep
  - 20-30 minutes is good
  - >45 minutes is not good
- Shift schedule
  - Should you be working OT?

Driver Fatigue
On the Road

- Get fresh air into your vehicle
- Keep your eyes moving
- Vary the siren pitch
- Maintain a conversation
- STOP

No remedies fully offset the need for restful sleep!

Other Impairments

- Substance abuse
- Prescription medications
- Over-the-counter medications
- Physical issues
  - Vision
  - Hearing
  - Orthopedics

YOU judge your readiness to drive.

Remember – it is not just YOU who is effected by your driving – it is your crew and the other vehicles around you. Don't be selfish.

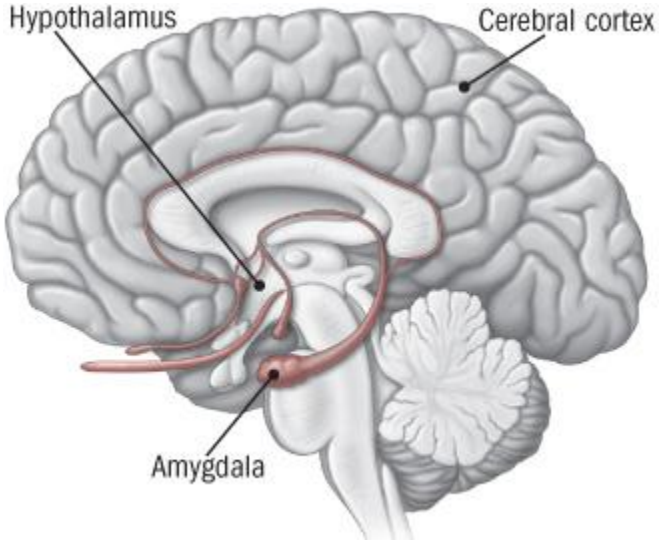
Emotions

- Aggressive drivers/Road rage
- Response to siren – “sirencide”
- Call type
- State of mind/Outside influences
- Shift dynamic/communication skills

EMOTIONS

When emotions overwhelm the operator:

- Tunnel vision/mission fixation may develop
- Vehicle speed increases
- Ability to prioritize actions appropriately is lost
- Communications break down



A *little* stress is good – a *lot* is not

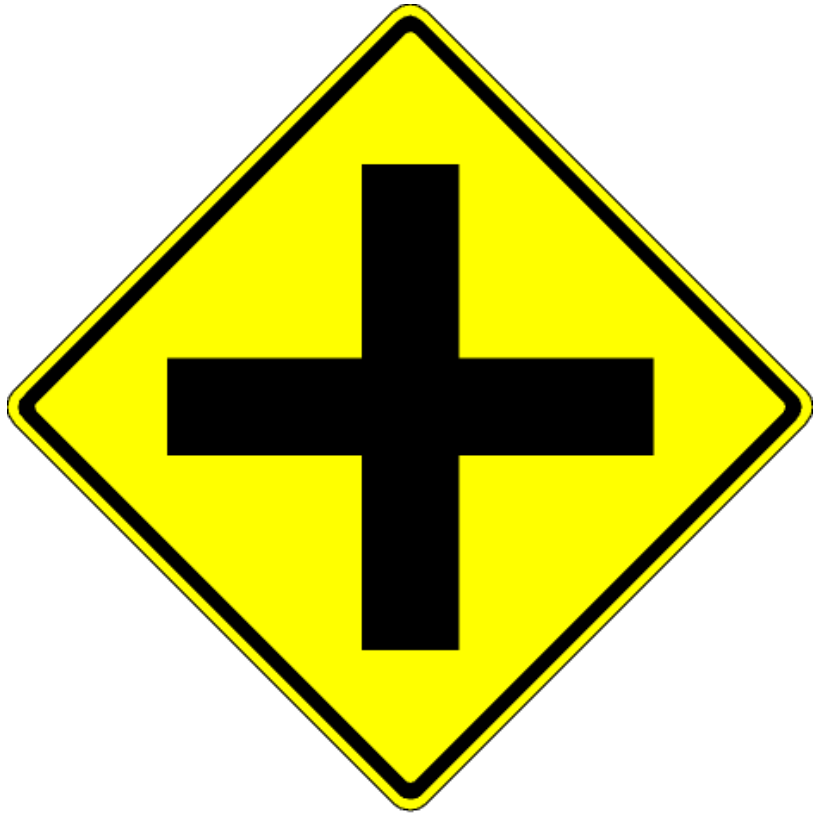
Smith System “E.D.G.E.” DVD

Operational Situations

Intersections, Tight Clearance, Night Driving, Fire Stations, Positioning, Railroad Crossings

Intersection Behaviors

- Approaching
- Entering
- Jumping
- Other units



Most likely location for an apparatus crash.

Intersections
Approaching

- One of the best proactive driving tactics is to reduce speed
- Adjust your speed to the available space cushion
  - Intersections are fixed object that as you close the gap you need to also reduce the stopping distance
- Reducing your speed gives other vehicles time to react to your approach
  - Let the play develop
- Change your siren cadence

Intersections
Approaching

- Search ahead and identify potential hazards
  - Other vehicles
  - Pedestrians
  - Bicycles
  - Blind spots – buses, trees, buildings
  - Status of control devices – traffic lights, pedestrian crossing signals
- Identify the path of least resistance
  - Lane patterns
  - Avoid opposing traffic
- Cover the brake

Intersections
Search & Identify

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Intersections
Search & Identify

Intersections
Entering

- Entry occurs as soon as your front bumper crosses into cross-traffic
- If you cannot positively identify that right-of-way has been yielded to you, you must stop
  - Must do this for each individual lane
- Make eye contact with other drivers
  - Are other cars “acting” like they see you?
- Even when entering with the green light remain vigilant of other vehicles entering the intersection
- Avoid using the apparatus as a moving roadblock – this is aggressive driving

Intersections
Jumping

- Operator depresses the accelerator hard from stopped position
- Vehicle jerks or jumps forward
- Hard on the apparatus
- Jumps before other vehicle moves forward is a common low speed, at-fault collision
- Smooth starts allow for decision space

Intersections
Other Units

- Zone of confusion - Created by two or more emergency vehicles responding together
  - Civilian driver sees one emergency vehicle, but hears a different one at the same time
  - Civilian driver thinks the coast is clear but pulls into your path
  - Elderly and teenagers are especially susceptible
- High-risk situation
- Anticipate other vehicles to make mistakes during the confusion

Intersections
Other Units

Intersections
Other Units

It happened here.

Engine 23 struck Ambulance 21 as they both entered an intersection enroute to a Hazmat Box.

Intersections
Procession Response

- Travel single file with largest vehicle leading to create a path
- Maintain space cushions
  - Expect the leading unit to stop
- Each vehicle must use the normal precautions
  - Proceed as though no other units already entered
- Use contrasting siren tones
  - electronic siren with alternating or pulsing tone.

Case Study #1

- Contributing Factors?
- MCFRS Guidelines
- Civil suit - 2014
  - Wrongful death
  - $186,000

July 26, 2010
Two FF killed

Arriving

- Deceleration
- Finding the address
- Apparatus positioning
- Parking

Arriving
Deceleration

- Allow the auxiliary braking systems to work
- Hard stops
  - Harsh on apparatus, equipment, crew
  - Indicates operator was not scanning ahead
- Smooth deceleration stops
  - Plan ahead
  - Good visual lead time – ¼ mile ahead
  - Pick your stopping point on horizon
  - Decelerate early

Deceleration Video

Arriving
Finding the Address

- Common element leading to crashes is passing the address
  - U-Turns in traffic
  - Backing against traffic
  - Operator gets frustrated
- Preplan & teamwork
- Know block numbers
- Know the cross street before the target block or identify “catching features”
- Reduce speed on the target block
- Use scene lighting
- Stop and read the map book

Class B apparatus are not simple to turn around!

Arriving
Positioning

- Approach the final spot slowly
- Spot for tactical advantage
- Leave clear space around vehicle
- Compartment doors
- Walking paths
- Outriggers
- Drive out instead of back out
- Leave access for incoming companies

Arriving
Positioning Considerations

- Assume passing motorists do not see the apparatus or the personnel on the roadway
- Situational positioning
  - Action areas
  - Cast a large shadow
  - Pump panel area
  - Smoke conditions
  - Hazmats
- Do you need to be on the road at all?

Arriving
Beaching

- Some situations encourage leaving the roadway
  - Tactical advantage for operations
  - Leaving space for other units
- What advantage is being gained by leaving the roadway?
- Will the surface support the apparatus?
- Will the entire apparatus be off the road or just some of the wheels?
- Can the apparatus get far enough off the road to actually offer a tactical advantage?

Arriving
Parking

- Come to a complete stop
- Transmission to neutral
- Set the spring brake
- Place a wheel chock
  - Redundant parking brake
  - Downgrade side
  - Required for parked vehicles either attended and unattended
  - Light vehicles can use parking brake
  - Turn wheels toward curb
  - Mark of a professional operator

Limited Access Roads

- Higher speeds
  - Less reaction time
  - Greater reaction forces
  - Less siren distance
  - Being out run
- Driving on the shoulder
  - Anticipate other vehicles moving into your path
  - Slow down
  - Siren or no siren?

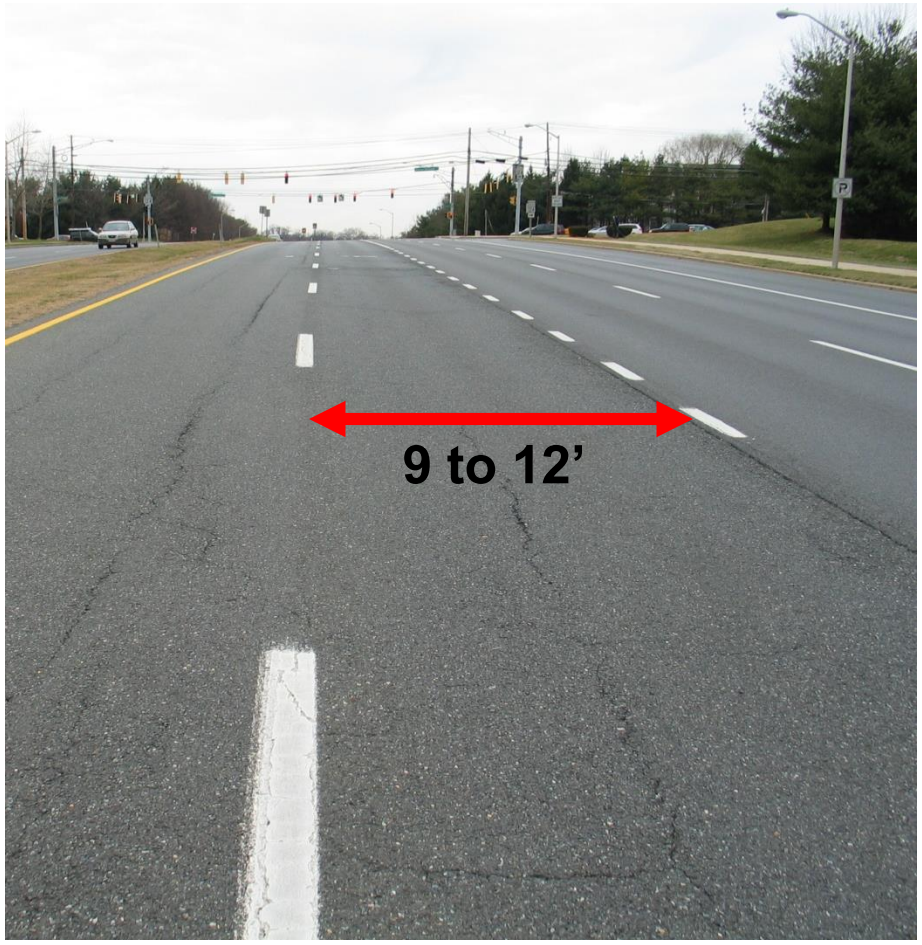
Railroad Crossings

- MCFRS policy requires stops at unguarded crossings
  - Approach guarded crossings with skepticism
- Stop, look, and listen in both directions
- Trains may travel in either direction on all tracks
- Wait a moment to proceed after a train passes
- Never park or stop on train tracks
- More than one railroad or agency may operate on a set of tracks
  - Halting train traffic may be difficult

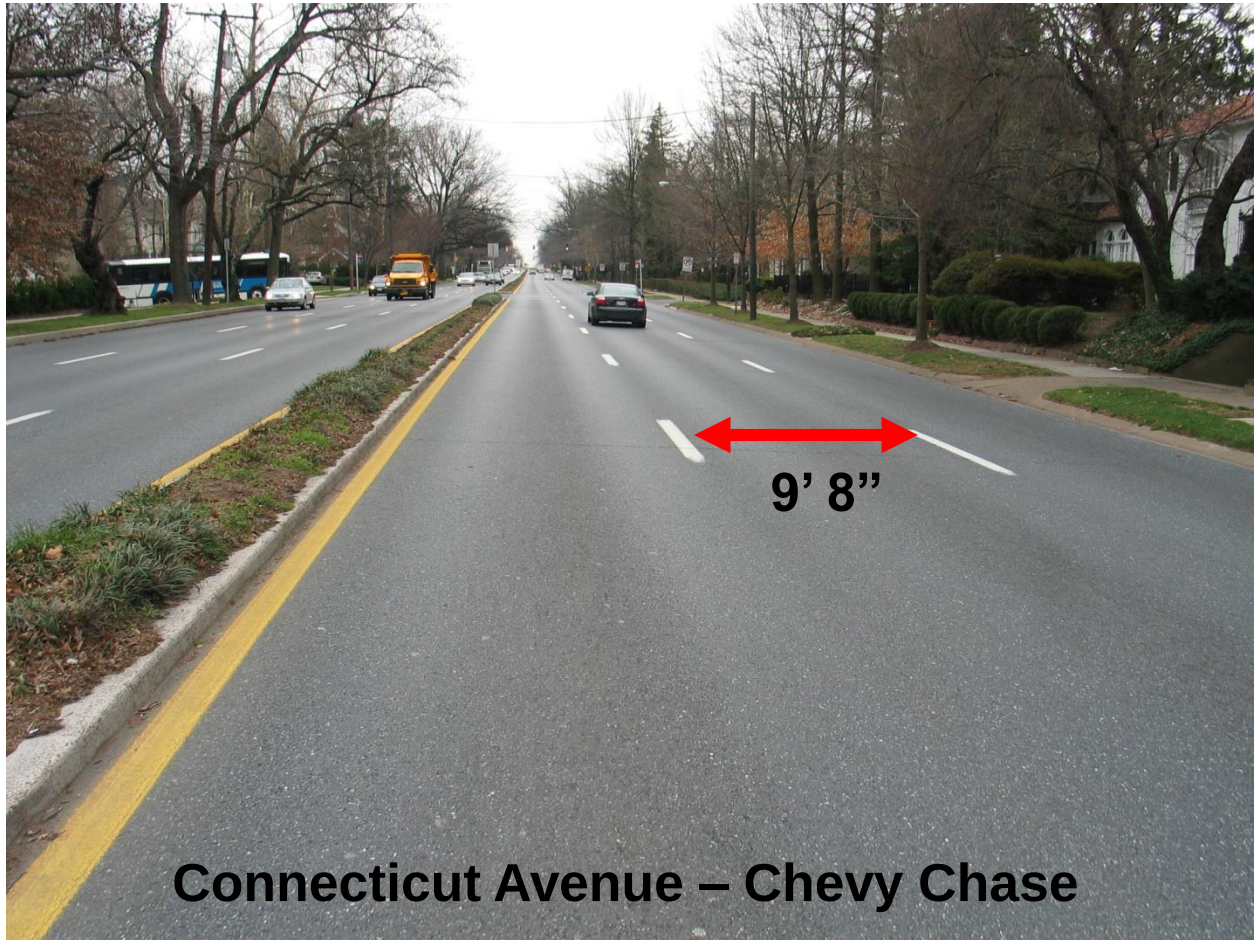
Collision video

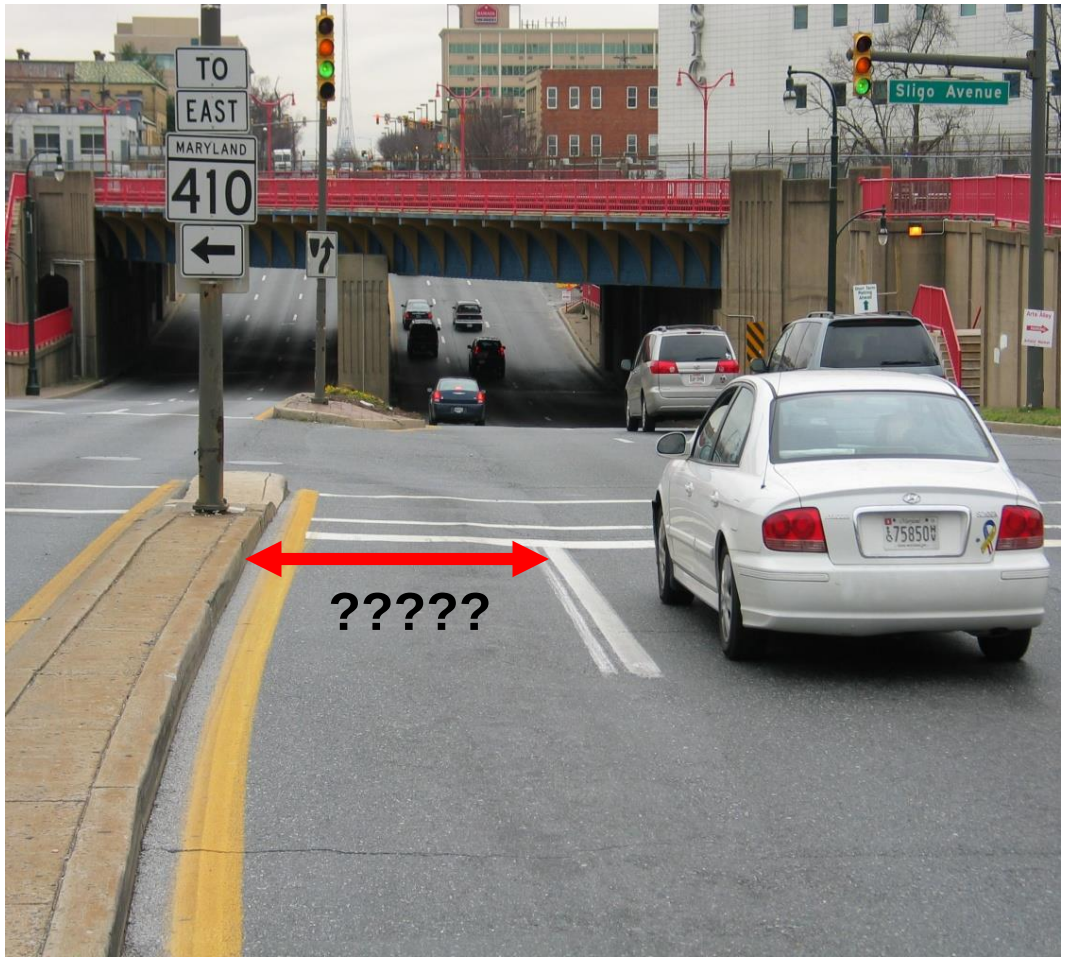
Tight Clearance

- Public roadways are typically 9 to 12 feet wide dependent upon speed and traffic volume
- Apparatus widths are:
  - 2008 Crimson – 9’ 9”
  - 2016 Freightliner EMS Unit – 9’ 6”
  - 2016 Pierce Arrow – 9’ 8”
  - SUV – 7’
- Private driveways, alleys, and other non-public roadways have no standard

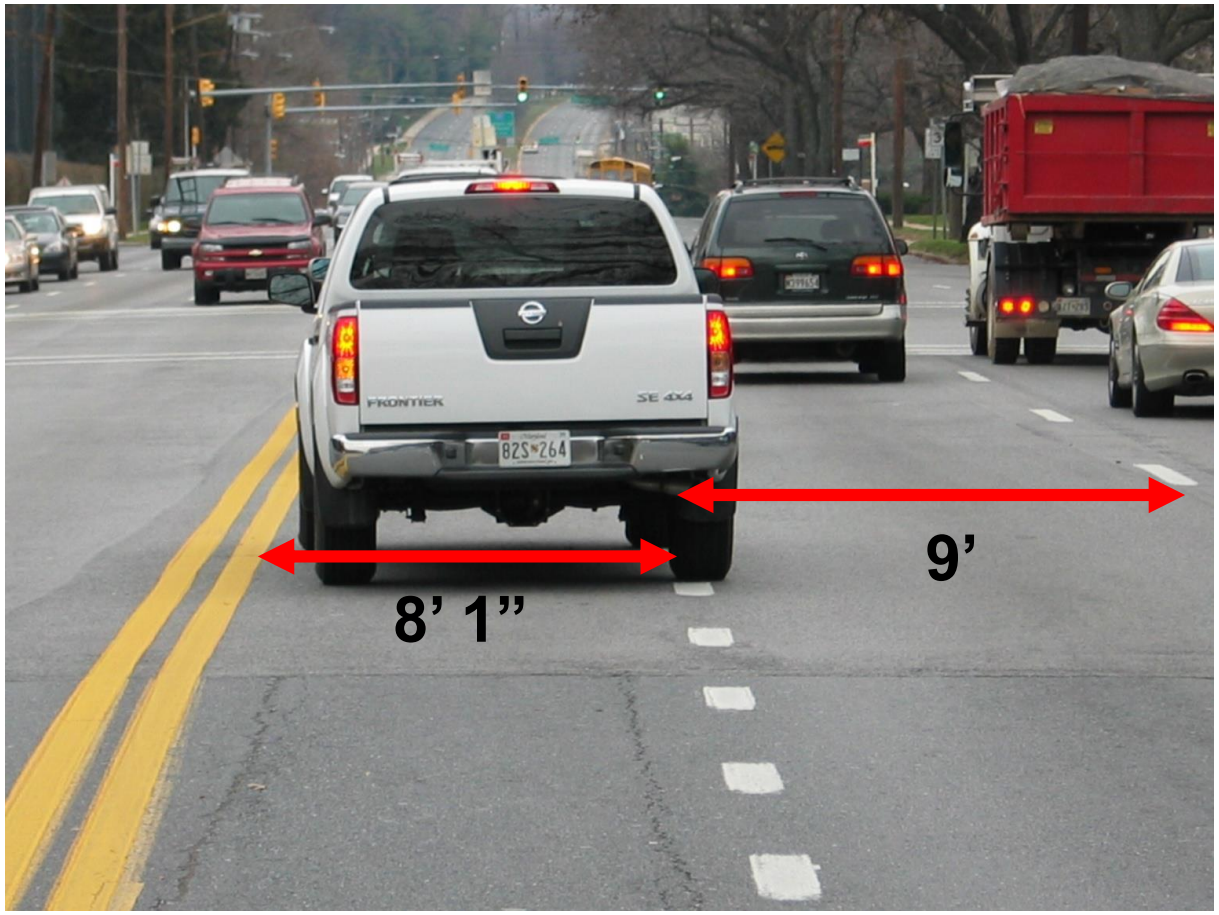


Tight Clearance





Tight Clearance
Turn Lanes



Tight Clearance

Tight Clearance

Your margin for error with a 20 or 35-ton vehicle can be inches.

- How fast should you be going?
- How important is it to squeeze through?
- Will the situation clear if you wait?

Tight Clearance
When you Must Go

- Expand your “look ahead” distance
- Use spotters to assist the driver
- Crowd or change lanes
  - Must know what is going on around the vehicle and have complete situational awareness
  - Do not run other vehicles out of their lane
- Use appropriate speed
  - Time to identify obstacles, decide options, and execute the maneuver
- Best visibility for the driver is the driver’s side of the apparatus
  - keep the driver’s side of the apparatus as close as reasonable to the fixed objects
  - Use mirrors to watch clearances as fixed objects are passed.

Underbody Clearance

- Angle of approach
- Angle of departure
- Underbody clearance
- Clearances can vary
  - Unit to unit
  - Same unit; different conditions
  - Prior damage

Underbody Clearance

- Apparatus components may drag when transitioning between surfaces
  - Parking areas
  - Driveways
  - Curbs
  - Medians – paved or unpaved
- Damage prevention
  - Signs of prior damage on pavement
  - First due knowledge
  - Approach or depart at an angle

Night Driving

- All of the same hazards as daytime driving, but with less visibility
- Most drivers use the same approach to driving day or night
- Night-time driving problems are not recognized or understood
- Fatal collision rates are 3x higher at night
- More encounters with impaired drivers
- Prime time for road closures or work

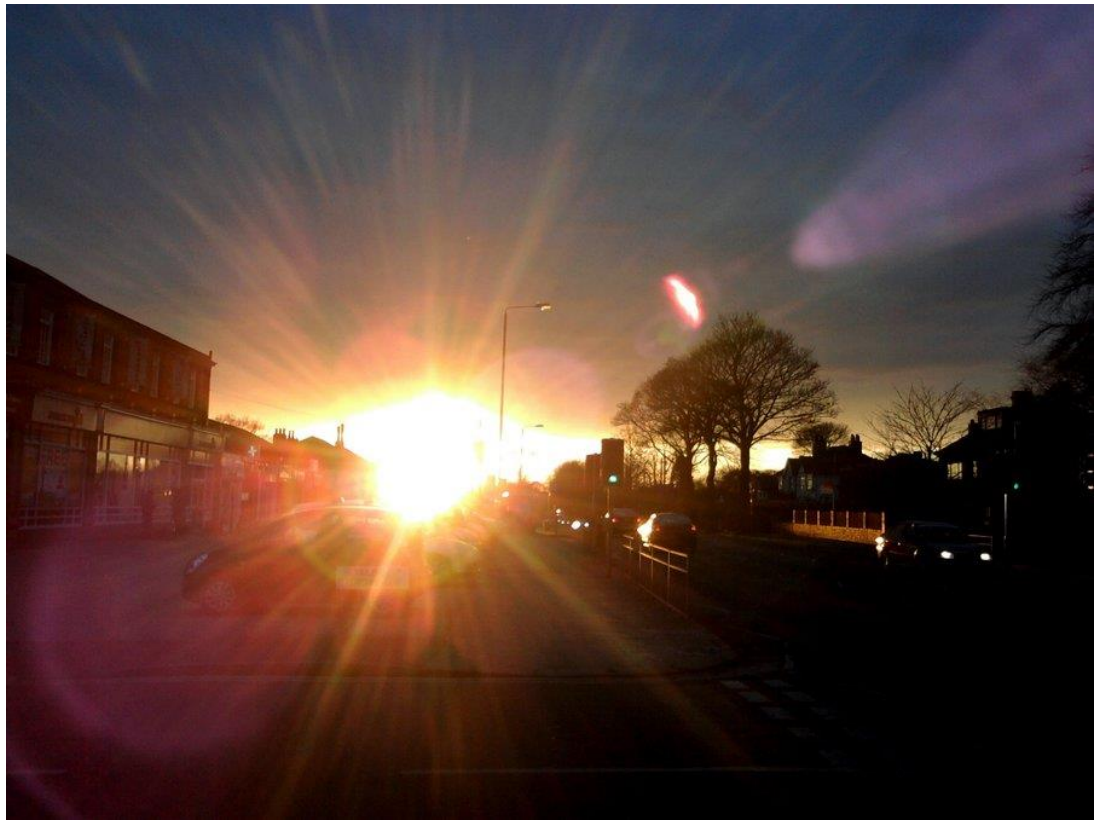
Night Driving
Challenges

- Difficulty with visual perception
- Eyes adapting to changing levels of brightness
  - Other drivers blinding you
  - You blinding other drivers
- Visual “cues” at darkness are eliminated
- Shorter and narrower fields of vision
- Limited or no visibility in mirrors and to the rear
- Reduced level of alertness (fatigue)
- Seniority

Night Driving
Glare

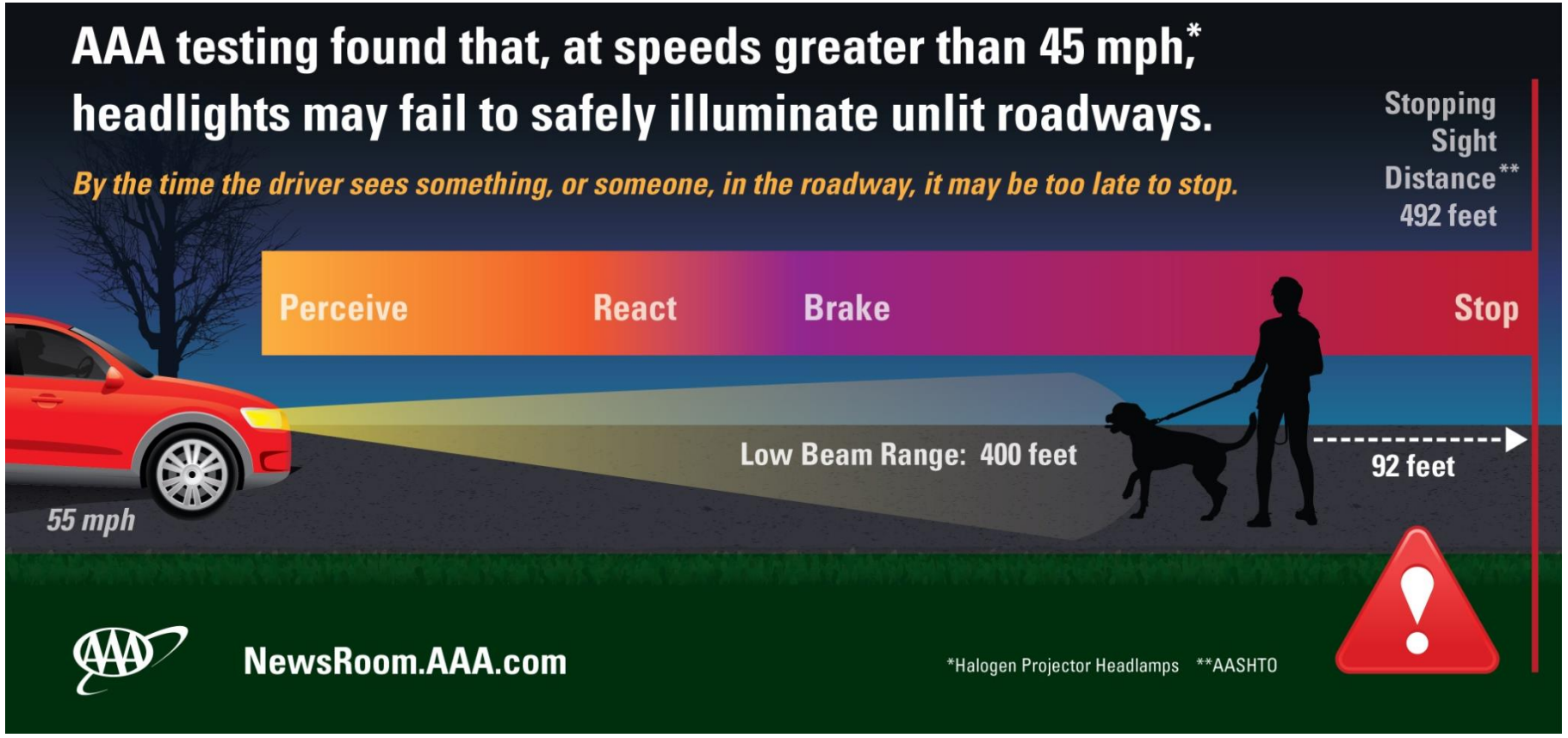
The human eye takes about 7 seconds to fully recover from being blinded by bright light.

In 7 seconds, a vehicle traveling 60mph will travel 616 feet.



Night Driving
Precautions

- Know the range of your headlights
- Reduce speed and increase following distances



Night Driving
Precautions

- Avoid driving while fatigued whenever possible
- Keep your eyes moving to avoid glare and fixating
- Recognize that your warning lights and floodlights will create glare for other drivers
- Reduce glare inside the cab by using red overhead lights, dimming the MDT screen, and dimming the panel lights
  - Communicate to the crew when lights in the rear of the cab are a problem
- Keep your windshield, headlights and warning lights clean

Parking Lots

- Immediately limited clearance
- Physical Hazards
  - Tight corners
  - Landscape trees overhanging lanes
  - Protective bollards
  - Light poles
  - Landscape rocks
  - Illegal parking – fire lanes
- Pedestrians
- Distracted drivers
- Adjust time of day if possible
- Avoid entering parking lots whenever possible
- Choose your parking spot
- Should you park?

Around the Firehouse

Leaving the Bay

- Complete a visual check
- Disconnect shorelines
- Verify the door is fully open
- Verify the crew is ready
  - Seated, belted, doors closed
- Leave slowly
- Engage any traffic control

Overhead Doors

- When the door is in motion you should be stationary
- Do not rely upon collision sensors
- Sensors are for human safety
  - Too slow to avoid apparatus
- Know how your doors work!

SUMMARY

- Apparatus operators must judge their own ability to perform when faced with fatigue or emotional stress
  - Do not be selfish – other people's lives are relying upon your readiness
- Fire apparatus face a variety of situations that increase the risk of collisions
  - Intersections pose the most serious and frequent threat for a severe collision
  - Congested areas restrict your ability to act so you must slow down
  - Know the six sides of your apparatus – not just the height and width
  - Everyday errands can lead you into collision-prone areas and combine with complacency due to familiarity